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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,497	04/20/2001	Shojiro Kawakami	FUK-81	4970

22855 7590 04/17/2003

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EXAMINER

CURTIS, CRAIG

ART UNIT PAPER NUMBER

2872

DATE MAILED: 04/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/762,497

Applicant(s)

KAWAKAMI et al.

Examiner

Craig Curtis

Art Unit

2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 8, 2003
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 12
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Objections

1. Claims 3 and 7 are objected to because of the following informalities: Applicants' use of the modifiers "more" and "less," respectively, in the description of the refractive characteristic of said media in claim 3 is misdescriptive. Although it is likely that Applicants intended to distinguish between the refractive indexes (*read:* indices) of the claimed refractive media, the "more" and "less" terminology gives rise to the possibility that the modifiers refer not to the claimed layers but, rather, to as-yet-unidentified media. It is suggested that Applicants substitute the word "first" for the presently recited "more" and the word "second" for the presently recited "less." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

With regard to claim 1 in particular (and to claims 2, 5, and 6 as a result of their dependency therefrom), the claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with

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grammatical and idiomatic errors. The phrase "wherein the shape of the layers, each of which is a unit of lamination of each transparent body, at least one of has a regularly undulated structure along an x-axis, are uniform along a y-axis, and has a regularly or non-regularly undulated structure which has a larger pitch than along the x-axis,..." in particular renders claim 1 and claims depending therefrom unintelligible as presently drafted. Moreover, proper antecedent support has not been provided for the limitation "...the shape of layers..." recited in claim 1, line 5.

With regard to claims 3, 4, and, by extension, claim 7, the recitation "dry etching on a substrate which has at least one of regularly arranged grooves, etc...." appears to be misdescriptive in that it is by said dry etching that said regularly arranged grooves, etc, are produced on said substrate, said substrate presumably being featureless prior to said dry etching. It is also suggested that said "dry etching" be recited in proper method form: that is, for example, "...including a step of dry-etching a substrate...."

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al.'s Fabrication and Observation of 3D Photonic Crystals Composed of Si/SiO₂ with Sub-Micrometer Periods.

Kawakami et al. disclose (see Fig. 1) the invention as claimed, a polarizer and method steps for producing a polarizer comprising:

a multilayered structure along z-axis consisting of two or more transparent bodies which have different refractive indexes (Fig. 1: Si/SiO₂ (n=1.46); Si (n=3.24)) ;

wherein the shape of the layers, each of which is a unit of lamination of each transparent body, at least one of has a regularly undulated structure along an x-axis, is uniform along the y-axis, and has regularly or non-regularly undulated structure which has a larger pitch than along the x-axis (see Fig. 1); and

the lamination along the z-axis repeating the shape, and being configured for acting against the light such that the light thereby has a component whose incidence direction is not zero from the z-axis in the three-dimensional orthogonal coordinates (x, y, z) associated with the polarizer (See Fig. 1);

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wherein the polarizer has a first refractive medium layer containing one of Si and TiO_2 as a main component and a second refractive medium layer containing SiO_2 as a main component (see Fig. 1);

said method for producing a comprising the steps of:

laminating a more refractive medium and a less refractive medium with a regularly repeating shape by a film-forming method at least partly including the dry etching on a substrate which has at least one of regularly arranged grooves or regularly arranged linear projections or thin and long projections or thin and long grooves (see Fig. 1, entire document);

laminating a more refractive medium which contains one of Si or TiO_2 as a main component and a less refractive medium which contains SiO_2 as a main component with a regularly repeating shape, said laminating performed by a film-forming method at least partly including the dry etching on a substrate which has at least one of regularly arranged grooves, regularly arranged linear projections, thin and long projections, and thin and long grooves (see Fig. 1, entire document).

wherein the shape of layers at least one of has a regularly undulated structure along said x-axis and is uniform along a y-axis (See Fig. 1);

wherein said first refractive medium layer has a first index of refraction, said second refractive medium layer has a second index of refraction, said first index of refraction being greater than [said] second index of refraction (See above; entire document); and wherein said substrate has at least one of thin and long projections and thin and long grooves (See Fig. 1).

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Response to Arguments

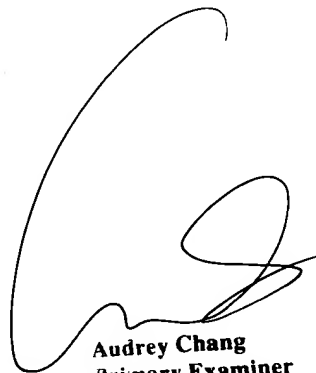
4. Applicants' arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

Craig M. Curtis
Craig M. Curtis
Group Art Unit 2872
14 April 2003


Audrey Chang
Primary Examiner
Technology Center 2800